

Rhodora

JOURNAL OF

THE NEW ENGLAND BOTANICAL CLUB

Vol. 58

February, 1956

No. 686

NOTES ON TRIPHORA TRIANTHOPHORA IN ONTARIO

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EARLY in the summer of 1950, while the senior author was inspecting a woodlot in south-eastern Essex County, his attention was attracted by a small plant (approximately four inches tall) which was unlike any plant observed by him previously.

The plant had a fragile semi-transparent appearance and was of a light green or yellowish green color. Stem leaves were few in number, and small, being less than one-half inch in length, oval in outline, rounded to a triangular tip, and with a sheathing or clasping base. Subsequent visits were made to the area and other similar plants, about a dozen in number, were found in various parts of the woodlot. On August 21st the first flowers were observed and it was then recognized as a member of the ORCHIDACEAE.

By reference to "Gray's New Manual of Botany (Seventh Edition)", the plant was determined as *Pogonia trianthophora* (Sw.) BSP., although it was not recorded as from Ontario. Britton and Brown's Illustrated Flora further substantiated the original identification. This plant is given in "Gray's Manual of Botany (Eighth Edition)" and also in "Native Orchids of North America" by Correll as *Triphora trianthophora* (Sw.) Rydb. Neither of these authoritative works records it from Ontario, but Correll does say "from Canada (old record) through New England," etc.

The flowers arose from the axils of the leaves of the upper stem, the uppermost of the leaves being reduced in size so as to appear almost bract-like. The number of flowers on a plant varied from one to four.

The flowers resembled, in general form, those of *Pogonia ophioglossoides* (L.) Ker, but were much smaller in size being just over half an inch long. The color was milk-white to translucent. Under a low power lens, the papillose protuberances on the lip appeared almost crystalline. The crests of the lip showed a slight green coloration and a very slight suggestion of pink was observed on close inspections of some other portions.

On specimens examined, one or two tubers were attached to the end of the main root. These tubers were ovoid with the distal ends somewhat pointed and the proximal ends quite blunt. One plant obtained on August 21st was preserved. On September 12th, the same author again visited the area, and a specimen with a well-developed seed capsule was obtained. This specimen and the one obtained previously on August 21st are preserved in the author's herbarium.

In 1951, the area was inspected once, but no plants were observed. This peculiarity seems quite characteristic of this group of orchids, and may partially account for its lack of detection in an area so well populated. In 1952, I was in England and therefore unable to check the locality.

The next inspection of the area was on the 14th of August, 1953, when a specimen in flower was obtained. This was delivered in a fresh state that day to Dr. L. O. Gaiser who was summering at Crediton, Ontario, and she confirmed the original determination. The specimen was later verified by Mr. Charles Schweinfurth, of the Oakes Ames Orchid Herbarium and it has been placed in the Gray Herbarium, Harvard University. While obtaining this specimen a number of tubers were discovered which were not closely attached to foliaceous plants, but appeared to be evidence of the subterranean process of vegetative propagation which obtains in this and some related species. These tubers were usually in thick beds of hardwood leaves and humus, and somewhat remote from the mineral soil. Both authors visited the area in August, 1954, and saw at least twelve specimens in two neighbouring patches. Two inspections of the area in 1955 failed to reveal any plants.

The plants occurred in a sandy soil rich in humus, in medium to heavy shade of the native hardwood forest. The chief species of trees in the area in which this plant was found were

beech, hard maple, red oak, white elm, hickory and red ash. The Carolinian flora was represented there by tulip, chestnut, and sassafras, and in the general locality by flowering dogwood, sour gum, hop tree, papaw, and red mulberry.

Some authors class this orchid as a saprophyte. However, the amount of green in the plants observed would indicate that it is not entirely saprophytic and that under certain circumstances, at least, this species has the ability to develop chlorophyll and thus manufacture some of its own plant food.

The earliest reference to *Triphora trianthophora* (Sw.) Rydb. as having come from Canada, is in the Botanical Register (1825) t. 908. There, after the description of *Pogonia pendula*, John Lindley states; "Roots of this curious little plant were collected in Canada, by Mr. David Douglas, for the Horticultural Society, and flowered in an open border in the garden at Chiswick in August, 1824." A later paragraph includes the statement "Mr. Nuttall says it is parasitic round the roots of beech trees from New York to Kentucky, and that he has found it also in Canada."

W. J. Hooker, in *Flora Boreali-Americana* 11, p. 202 (1840), merely lists the plant referring to the above reference, but adds the name of Goldie to the two previously given after "Hab. Canada." Thus concerning the same plant, J. Macoun, in the *Catalogue of Canadian Plants* IV p. 11 (1888), writes: "Damp woods, Canada (Goldie fide Hooker)." He adds: "We have never seen a Canadian specimen of this species. It should be looked for in south-western Ontario."

While reports of this plant from Canada have been dropped from modern manuals, such as Gray's Manual (Seventh and Eighth Editions), Britton and Brown, and Gleason 1952, Correll (1950), referring to the "old record from Canada," gives credit to David Douglas for its introduction to England at Chiswick in 1824, as referred to by Lindley.

In the Journal kept by David Douglas during his travels in North America 1823-27, Wm. Wesley & Son, London (1914), his journey can be followed: On October 1 (1823) he crossed the Niagara River at Queenston, thus passing into the U. S. A., for "Lewiston on my way to Lockport." Then on page 17 begins the report: "Lockport, Friday, 3rd.—In company with

Mr. Thomas who kindly offered me the 'use of his person,' as he said, I visited woods north of Lockport which were almost all beech; we found two specimens of *Corallorrhiza*—one like *innata* of Britain, the other a small one. I secured plants of them"; continuing on page 18 we find: "the soil was dead leaves, very dry. Along with them grew *Triphora*,¹ also a *Cypripedium* in partly shaded parts, soil dry sandy peat; *Viola* sp. leaves round, large, flowers small white striated."

There is an appendix "Plants introduced by David Douglas during the years 1826-34" and on p. 334 is listed "*Pogonia pendula*, Lindl. in Bot. Reg. t 908-North America."

With these as the only references to *Pogonia* or *Triphora*, it would seem that if the belief that the species was collected in Canada is based on Douglas' collection, it is ill-founded.

A search has since been made for specimens or a report of a collection of this plant in Canada that would confirm the "old record." Negative reports to inquiries for Canadian specimens have come from the curators of the following herbaria: National Museum and Dominion Experimental Farm in Ottawa, Botanical Garden in Montreal, the Universities in Toronto, Kingston, London, Hamilton and the Agricultural College at Guelph, Ontario. There is also no former specimen from Canada in the Gray Herbarium.

When the inquiry was sent to the first of these herbaria, Mr. A. E. Porsild kindly offered to look for specimens of *Triphora trianthophora* at Kew and the British Museum when he visited those herbaria during the year 1954-55. We are deeply indebted to him for his help.

He has reported the following: At Kew, under the above name are seven sheets, each with 1-3 separate collections. One sheet, stamped "Herbarium Hookerianum 1867," contains three collections, two of which are labelled *T. pendula* with given localities in the U. S. A. and a third labelled "*Arethusa pendula*," written on the original ticket, and in another hand, "Canada Gouldie." On a second sheet are collections labelled *T. pendula* likewise "Herb. Hook. 1867," each bearing a collector's name but no other data. That in the lower right corner, in Hooker's hand, bears the name "Douglas." The rest are all specimens from the U. S. A.

¹*Pogonia* Benth & Hook"

Mr. Porsild concluded, "Thus at Kew there is only one specimen definitely labelled Canada. Possibly 'Gouldie' is meant for 'Goldie'."

He further reported that no Canadian specimen could be found at the British Museum.

While there is neither evidence on the sheet bearing the Douglas specimen nor any record in his own Journal that he collected this plant in Canada, both Hooker's Herbarium and his Flora confirm Goldie's collection of it here.

FROELICHIA GRACILIS IN MARYLAND

S. F. BLAKE

Froelichia gracilis (Hook.) Moq., of the family Amaranthaceae, is regarded as indigenous in the region west of the Mississippi River from Nebraska or Iowa to Colorado, south to Texas, Arizona and Chihuahua. Its extension of range eastward in recent years even to several of the coastal states indicates the possession of a roving disposition which might complicate the problem of determining precisely its original native habitat. Standley, in 1916, did not know it east of the Mississippi, for he assigned a range from Iowa to Colorado, southward to Arkansas, Arizona, and Chihuahua (North Amer. Flora **21**: 127). The seventh edition of Gray's Manual (1908) and both editions of Britton and Brown's Illustrated Flora (the second in 1913) had given a similar but more restricted range. In the 8th edition of Gray's Manual (1950) Fernald assigned essentially the same range as Standley had done, but added: "Adventive eastward to New York, New Jersey, and Virginia."

The first report from east of the Mississippi appears to have been that of H. D. House in 1924 (N. Y. State Mus. Bull. **254**: 303) recording it from railroad tracks at Despatch, Monroe County, New York, 1920, where it was found by D. M. White. Apparently the species has been collected only once again in New York, on waste land near railroad tracks at Cold Spring, Philipstown, Putnam Co., 22 Aug. 1953, by K. L. Brooks, S. J. Smith, and J. J. Wurdack. In 1929 H. C. Benke (RHODORA **31**: 146) reported it from Cairo, Illinois, where he had collected it in 1928. C. C. Deam in 1940 (Fl. Indiana 431. map 887)